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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,777	10/17/2005	Ziya Ramizovich Karichev	U 015716-6	4405
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LADAS & PARRY LLP 26 WEST 61ST STREET NEW YORK, NY 10023				
EXAMINER				
HAWKINS, KARLA				
ART UNIT		PAPER NUMBER		
1797				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/530,777

**Applicant(s)**

KARICHEV ET AL.

**Examiner**

KARLA HAWKINS

**Art Unit**

1797

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 and 22-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-11 is/are allowed.
- 6) ☒ Claim(s) 22-25 and 30-33 is/are rejected.
- 7) ☒ Claim(s) 26-29 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04/07/05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

**DETAILED ACTION**

***Allowable Subject Matter***

1. Claims 1-11 allowed.

The following is an examiner's statement of reasons for allowance: The prior art fails to disclose a method for purifying air for fuel cells, wherein the starting air is passed through an adsorber with an adsorbent of carbon dioxide, then the adsorbent is regenerated by heating, characterized in that an adsorbent is used in the adsorber, the adsorbent comprising hydrated oxides of transition metals which are regenerated at a temperature of 60-120°C by the air spent in a fuel cell.

2. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. Claims 26-29 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

- 4.

***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 22-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over **ISENBERG (US 5,601,937)**, and further in view of **GOLDSTEIN ET AL. (US 5,595,949)**.

7. Regarding claims 22-24, **ISENBERG** teaches gas reformers which are used to condition fuels for electrochemical fuel cell generators, where a portion of the spent gases from the fuel cell generator exhaust which forms a fresh supply of conditioned fuel gas for fuel cell generator operations (col. 1, lines 8-19); And during operation of the electrochemical generator 10, a gaseous oxidant O such as air or oxygen, is fed through the oxidant feed inlet 36, and enters feed conduit 56 at a temperature of about 500C to 700 C. The oxidant feed O can be heated by conventional means prior to penetrating the housing, such as by a heat exchanger coupled with a blower (col.8, lines 1-8).

8. **GOLDSTEIN** does not appear to explicitly a plurality of adsorbers comprising an adsorbent of carbon dioxide.

9. However, **GOLDSTEIN** teaches a blower 38 (figure 1); containers 20a, 20b, and 20c each container holding a CO<sub>2</sub> adsorbent material (col. 5, lines 61-67; figure 1); Figure 4 depicts a further embodiment of the system, an air blower 38, having an outlet port 60, is connected to one port 62 of a four-way valve 64(col. 7, lines 3-5).

\* **ISENBERG** and **GOLDSTEIN** are analogous art because they are from the same field of endeavor of air purification.

10. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the apparatus of **ISENBERG** to include the adsorbers comprising an adsorbent of carbon dioxide of **GOLDSTEIN**.

11. The motivation would have been that it has now been found especially for scrubbers in mobile applications that at CO<sub>2</sub> breakthrough there still remain a substantial amount of granules in the scrubber bed that has hardly reacted, with most of the reaction having occurred in an outer layer through which air enters the bed. If the complete bed is replaced in this stage, poor utilization of the overall scrubber material is realized (**GOLDSTEIN**, col. 3, lines 19-25).

12. Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made.

13. Further regarding claims 22-24, **ISENBERG** does not specifically teach the pipelines, but **ISENBERG** does teach the oxidant feed inlet 36, and enters **feed conduit 56**. If the prior art structure is capable of performing the intended use, then it meets the claim, Apparatus claims must be structurally distinguishable from the prior art in terms of structure, not function. The manner of operating an apparatus teaches all of the structural limitations of the claim (see MPEP § 2114 and § 2173.05 (g)).

14. Regarding claim 25, **GOLDSTEIN** teaches an air blower 38, having an outlet port 60, is connected to one port 62 of a four-way valve 64 (col. 7, lines 3-5).

15. Regarding claims 30-31, **GOLDSTEIN** discloses a thermal management controller 42 (figure 1).

16. Regarding claims 32-33, **GOLDSTEIN** teaches a CO2 absorbent material comprising Group 1a metal hydroxide(col.2, lines 50-54).

***Response to Arguments***

Applicant's arguments, see page 9, filed 05/27/09, with respect to the former prior art do not disclose the adsorbent comprising hydrated metals which are regenerated at a temperature of 60-120C by the air spent in the fuel cell have been fully considered and are persuasive. The rejection under 35 USC 103 (a) as being obvious over the combination of **GOLDSTEIN ET AL. (US 5,595,949)**, **CASSIDY (US 2002/0005117)**, and **OOHARA (US 6,238,544 B1)** has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of **ISENBERG (US 5,601,937)**, and further in view of **GOLDSTEIN ET AL. (US 5,595,949)**. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARLA HAWKINS whose telephone number is (571) 270-5562. The examiner can normally be reached on Monday-Friday 8:30- 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason M. Greene/  
Primary Examiner, Art Unit 1797

Karla Hawkins  
Examiner  
Art Unit 1797